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EXAMINER

NGUYEN, CAM N

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

06/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Response to Amendment

1. The amendment filed on 03/14/08 has been made of record and entered. Claims 1-7 & 13 have been canceled. Claims 8 & 14 have been amended. Claim 15 has been added.

Claims 8-12 & 14-15 are currently pending in this application.

Claim Objections

2. Claims 8, 10, & 14 are objected to because of the following informalities:

- A. In claim 8, line 7, --by weight-- should be inserted after “30%”.
- B. In claim 8, last line, “alkali earth” should be changed to --alkaline earth--.
- C. In claim 10, line 2, “mass %“ should be changed to --% by weight--.
- D. In claim 14, line 6, --by weight-- should be inserted after “30%”.
- E. In claim 14, line 7, “alkali earth” should be changed to --alkaline earth--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112 (Second Paragraph)

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the limitation "the ceramics" in 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-12 & 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sangiovanni et al., "hereinafter referred to as Sangiovanni '561", (US Pat. 6,649,561 B2) **taken together with** Tanaka et al., "hereinafter Tanaka", (US Pat. 6,887,816 B2).

Sangiovanni '561 discloses a honeycomb photocatalyst matrix, which comprises a honeycomb-shaped skeletal structure of lightweight material, possibly ceramic or more typically a metal, such as aluminum, formed or assembled as an array of multiple, substantially parallel cells open at opposite ends for fluid flow therethrough and illumination therewithin, the cells having respective surfaces, and a coating of photocatalyst on the surfaces of the cells, whereby the coated surfaces are activated by ultraviolet illumination to remove contaminants from fluid flowing through the cells (see col. 2, ln 23-33). When the metal substrate is used instead of ceramic substrate, the ceramic oxide layer is provided on both sides of the metal substrate to provide a ceramic substrate (see col. 2, ln 57-65). The photocatalyst coating is made of titania (see col. 2, ln 65-col. 3, ln 3). See also col. 8, claims 1-6. The loading of the titania powder in

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the titania slurry is maintained in the range from about 20 weight % to about 30 weight % (see col. 8, claim 7).

Regarding claims 8 & 14, the claims require “a pre-coat layer comprises titanium oxide in an amount of at least 30 % by weight”. The reference teaches titanium oxide in an amount of “about 30 weight %”, which appears to be very close to the claimed amount. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized such titanium oxide amount in order to achieve an effective catalyst material because it is result effective variable, in view of *In re Boesch*.

Regarding claims 8 & 14-15, Sangiovanni does not disclose alkali metal and/or alkaline earth metal loaded on the catalyst carrier. It would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have incorporated such known alkali metal and/or alkaline earth metal into the honeycomb photocatalyst matrix of Sangiovanni in order to achieve an improved catalyst material exhibiting sufficient photocatalytic properties when irradiated with light from a practical light source of low quantity of light, etc. because it is known and suggested by Tanaka '816 (See Tanaka '816 at col. 1, ln 11-20 & col. 24, claim 12).

Regarding claims 9-10, Sangiovanni does not teach that the TiO_2 is of rutile type TiO_2 . However, it would have been *prima facie obvious* to one of ordinary skill in the art at the time the invention was made to have utilized such known TiO_2 rutile type in order to achieve an improved and effective catalyst material in Sangiovanni because it is known in Tanaka '816 to use titanium oxide having rutile type crystal structure to prepare similar catalyst material (see col. 24- col. 26, claims 1-62 of the reference).

Regarding claim 11, while Sangiovanni does not disclose the claimed amount of the pre-coat layer/volume of the catalyst carrier, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have predetermined optimum amounts of such pre-coat layer and catalyst carrier sufficient to result in an effective catalyst material because it is result effective variable, in view of *In re Boesch*.

Response to Applicants' Arguments

5. Applicants' remarks filed on 03/14/08 has been fully reconsidered, but not deemed persuasive in view of the new ground of rejection(s) and/or objection(s) above and the following reasons.

It would appear that applicants' argument in the response on page 6, middle paragraph regarding the Sangiovanni reference is on the intended use of the catalyst. This is not found persuasive because the instant claims are drawn to a catalyst and not a process of use. It is the composition and catalytic structure of the claimed catalyst should be compared with the disclosed catalyst material. Table 1 of applicants' specification on page 21 and Examples have also been reviewed; however, the Examiner does not see (or the specification does not clearly point out) a showing of TiO₂ at different amounts above and below 30% by weight. The comparisons provided in the instant disclosure are insufficient and they do not overcome the rejection made.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

7. Claims 8-12 & 14-15 are pending. Claims 8-12 & 14-15 are rejected. No claims are allowed.

Contacts

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Primary Examiner Cam N Nguyen, whose telephone number is 571-272-1357. The examiner can normally be reached on M-F, 9:00 AM - 6:30 PM, at alternative work site.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Cam N. Nguyen/

/C.N.N./

Primary Examiner

June 23, 2008

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